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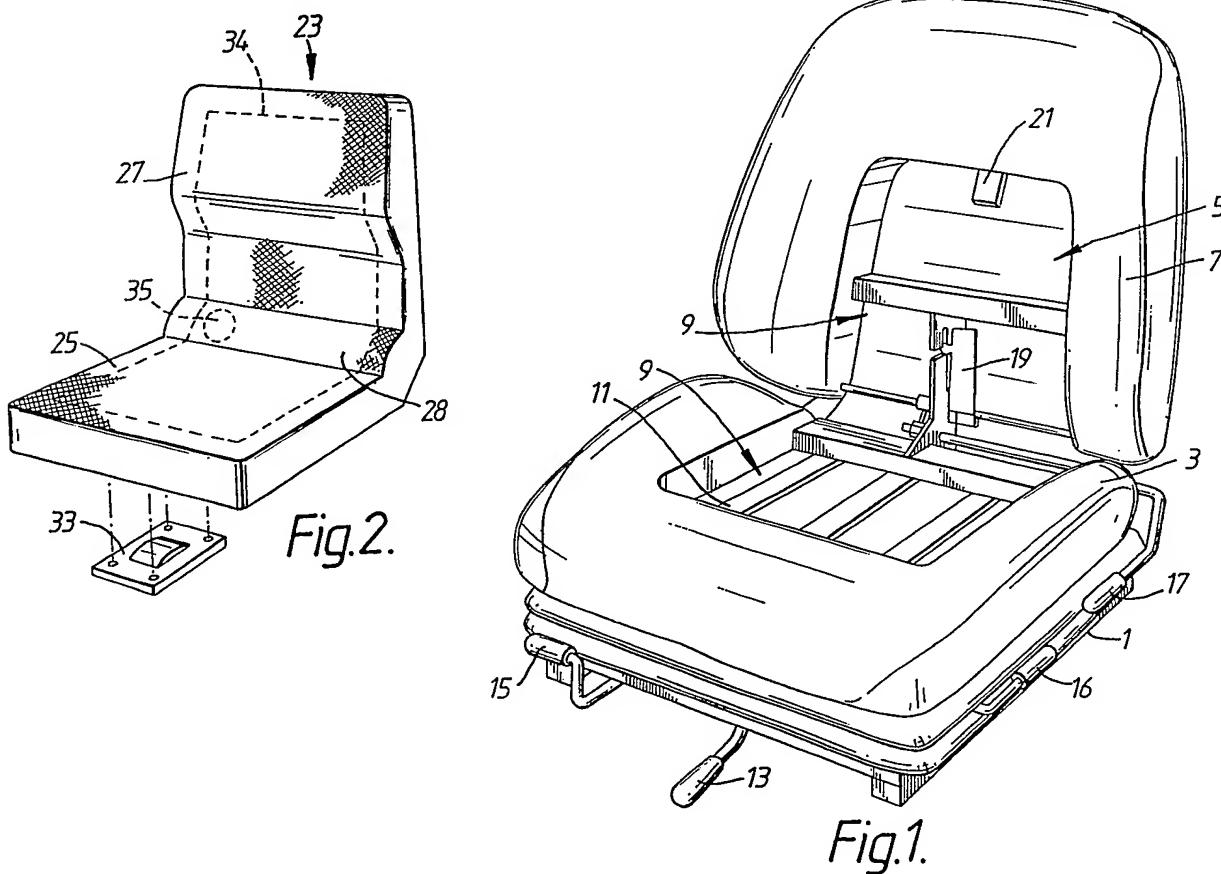
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EP 0331241 A2

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UK CL (Edition L) A4L LATC LBBA LBLA LBLE  
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## (54) Seat with removable insert

(57) A seat suitable for use in a vehicle such as an industrial work vehicle, includes a support member and a removable seat insert 23 designed to fit into a recess 9 in the support member. The support member includes a framework 1 to which is attached a base cushion 3, and a back panel 5 to which is attached a back cushion 7, each cushion 3, 7 being of generally horseshoe configuration so as to define the recess 9. The removable seat insert 23 may include a heater pad 34 and a pressure sensitive switch 33.



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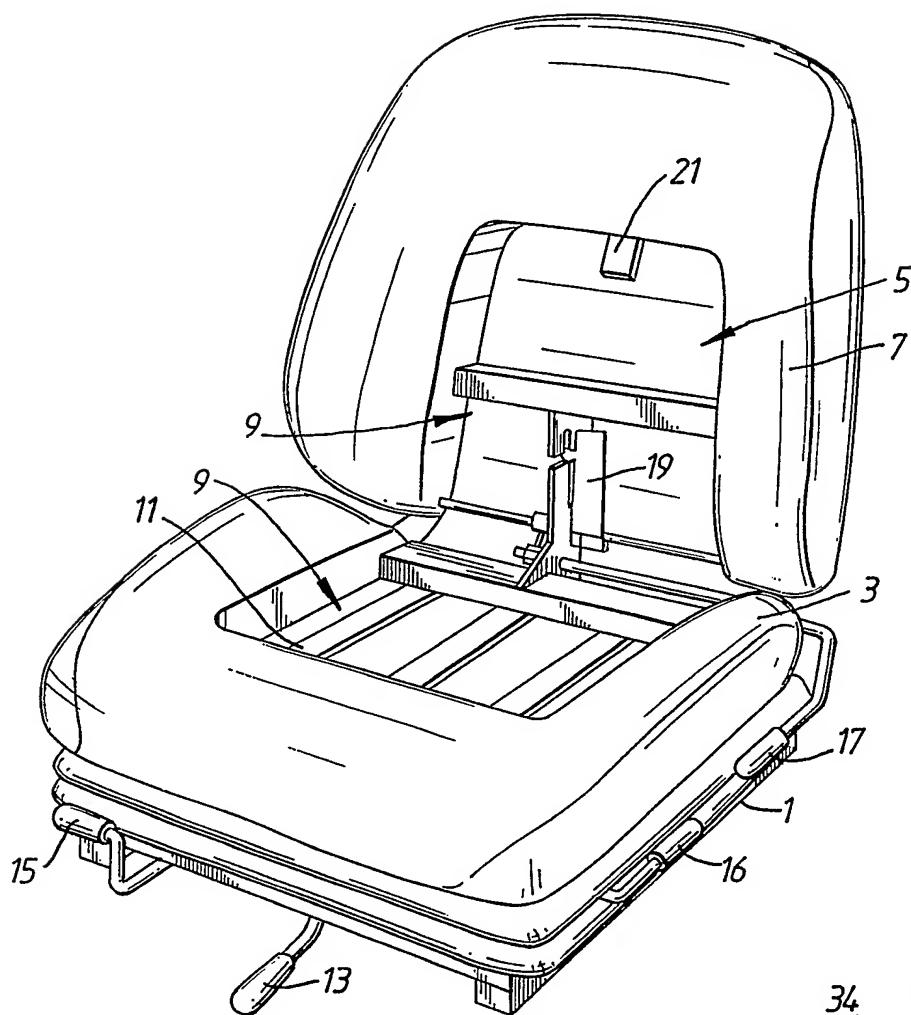


Fig.1.

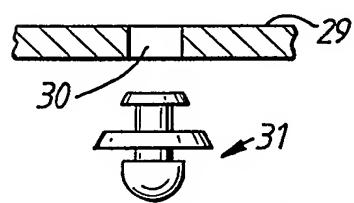
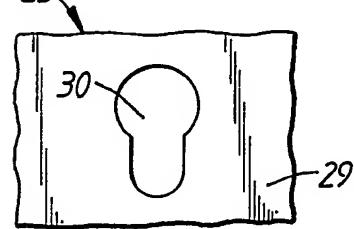


Fig. 3.

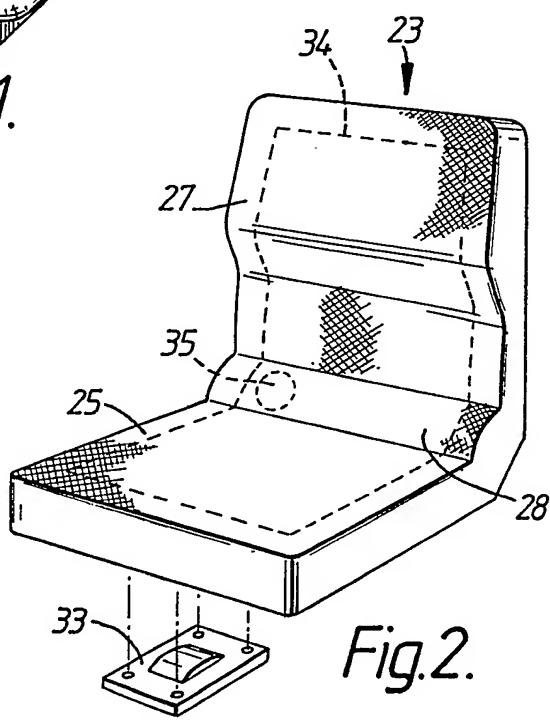


Fig.2.

SEATS

This invention relates to seats. The invention has particular, although not exclusive, relevance to seats for industrial work vehicles, for example forklift trucks.

Known seats for forklift trucks are commonly fitted with heater elements so as to improve the comfort of the occupant of the seat during cold weather. Such seats also commonly incorporate switches, for example microswitches, effective to switch off the engine of the truck or sound an alarm when the driver of the truck leaves his or her seat. Items such as the heater elements and the microswitches are difficult to fit as options on existing seats. Furthermore, if the heater element or the microswitch needs replacing, this normally involves removal of the seat from the truck in which it is situated.

It is an object of the present invention to provide a seat suitable for use in a vehicle such as a forklift truck wherein these problems are at least alleviated.

According to a first aspect of the present invention there is provided a seat including a support member defining the base and back of the seat, and a removable

seat insert designed to fit into a recess in the support member.

The support member suitably includes at least one generally U-shaped, preferably at least partially upholstered, portion defining at least part of the recess. Usually, there will be two oppositely directed, generally U-shaped portions, effective to define the recess between them, and carried on the base and back of the seat.

The removable seat insert suitably comprises a base portion and a back portion connected by a flexible portion, so as to enable inclination of the back portion relative to the base portion.

The removable seat insert may incorporate a heater arrangement for connection to an external power supply. Alternatively, or additionally the removable seat insert may incorporate a switch means operable by pressure on the seat insert, the switch means being connectable to an external power supply..

The seat may include a hook member attached to one of the support member and the removable seat insert, the hook member being effective to engage the other of the

removable seat insert and the support member.

The seat is suitably a vehicle seat.

According to a second aspect of the present invention there is provided a removable seat insert adapted to fit in a recess in a support member for a seat.

According to a third aspect of the present invention there is provided a support member defining the base and back of a seat, the support member including a recess adapted to receive a removable seat insert.

One embodiment of a seat in accordance with the invention will now be described, by way of example only, with reference to the accompanying figures, in which:-

Figure 1 is a schematic diagram of part of a seat in accordance with the embodiment of the invention;

Figure 2 is a schematic diagram of a seat insert for insertion in the part of the seat shown in Figure 1; and

Figure 3 is both a plan and partly sectioned schematic diagram of an attachment mechanism fitted on the underside of the seat insert of Figure 2, the mechanism

being shown on an enlarged scale to that of Figure 2.

The seat to be described is intended for use as a driver's seat in an industrial work vehicle.

Referring firstly to Figure 1, the seat framework shown in Figure 1, which is fitted on the vehicle comprises a metallic framework 1 to which is attached a base cushion 3 of generally horseshoe configuration. At the back of the seat there is provided a rigid panel 5 to which is attached a back cushion 7 also of generally horseshoe configuration, the cushions 3,7 being oppositely directed so as to define, between them, a recess 9.

The framework 1 includes a number of struts 11 which span the recess 9. At the front of the framework 1 there is provided a handle 13 which is attached to a mechanism (not shown) effective to adjust the loading on the seat dependent on the weight of the driver. The framework 1 also carries at the front, a lever 15 attached to a mechanism (not shown) effective to enable the driver when sitting on the seat to move the seat along the longitudinal axis of the vehicle, thereby to enable the driver to achieve an optimum driving position. On the right hand side of the framework 1 as shown in Figure 1, there is provided a handle 16

effective to raise and lower the cushion 3, and a further handle 17 effective, via mechanism 19, to vary the inclination of the back of the seat 5 relative to the base of the seat. On the back panel 5 there is provided a hook 21 whose function will be described hereafter.

Referring now also to Figure 2, the seat also includes a removable seat insert 23 comprising a base cushioned member 25 and a back cushioned member 27 connected by a flexible portion 28. Each cushioned member 25,27 comprises a rigid board to which is attached a pad, the pad on the back cushioned member 27 being profiled so as to follow the contours of the back of an average driver. The base and back cushioned members 25,27, and the connecting portion 28 are dimensioned so as to be a push fit in the recess 9 defined by the horseshoe shaped cushions 3,7. The back cushioned member 27 is secured in the recess 9 by means of the hook 21 which engages an aperture (not shown) in the rear of the back cushioned member 27. The flexible connection portion 28 allows the back cushioned member 27 to be inclined with the back of the seat when this is required.

Referring now also to Figure 3, towards the front of the board 29 at the underside of the base cushioned member

25, there are provided two keyhole shaped apertures 30, only one such aperture being shown in the Figure. In respect of each aperture 30, there is provided a plastics "push in" type cup connector 31 as is well known in the vehicle industry. The cup of each cup connector 31 is designed to locate in respective suitably positioned apertures 32 formed in two of the struts 11 of the seat framework 1, thereby positioning the base cushioned member 25 on the seat framework 1, the connector 31 deforming on insertion of the connector 31 into the framework 1.

Referring now again to Figure 2, in the base cushioned member 25 there is incorporated a sensor switch 33 in the form of a microswitch, this being shown in exploded form in the Figure for the sake of clarity. This is designed to be sensitive to the weight of the driver when sitting on the seat to enable the ignition to the vehicle to be switched on. Thus, when the driver of the vehicle leaves the seat, the engine or motor of the vehicle will automatically switch off. Alternatively, the switch 33 may be arranged to cause an alarm (not shown) to sound if the driver of the vehicle leaves the seat without switching off the ignition. It will be appreciated that the switch 33 may take other forms, for example a pair of sensor pads incorporated in the base

cushioned member 25.

The seat insert 23 incorporates a heater pad indicated schematically as 34, this being connected to a thermostat shown schematically as 35 carried in the connecting portion 29, and electrical wiring for connection to the vehicle battery (not shown) such that the power to the heater pad is cut off when the thermostat 35 registers a predetermined temperature.

It will be appreciated that manufacture of a seat insert incorporating the heater pad 34, the thermostat 35 and the sensor switch 33, is much easier than the manufacture of a vehicle seat including these three components, thus leading to a saving in manufacturing costs. Furthermore, the seat insert 23 is readily replaceable in the event that one of the components 34,35,33 fails without requiring removal of the whole seat.

It will also be appreciated that use of the removable seat insert 23 enables the finish on the seat to be readily varied. Thus, in hot weather a seat insert 23 covered with a relatively fragile, but comfortable fabric material may be inserted, this being replaced in cold climates by an insert 23 covered with a more hard

wearing material such as P.V.C., the insert then usually including a heating pad.

It will be appreciated that in some circumstances the insert 23 may take the form of either a seat portion or a back portion. Furthermore, whilst the horseshoe configuration cushions 3,7 make the insert 23 particularly convenient to fit, the cushions 3,7 and insert 23 may be formed in different shapes. Thus, the base cushion 3 may be formed as two strips attached to the framework 1, whilst the back cushion 7 is also formed as two strips carried by the back panel 5. Alternatively, the seat insert 23 may provide the whole of the upholstered surface of the seat, the cushions 3,7 being omitted.

It will also be appreciated that whilst the hook 21 provided for attaching the back cushioned member 27 to the back panel 5 is a particularly convenient arrangement, this hook 21 may be omitted if the cushioned member 27 if a particularly close fit in the back cushion 7, or if other means, for example adhesive pads, are provided in the seat to attach the back cushioned member 27 to the back panel 5. Likewise the cup and aperture arrangement 30,31,32 provided for positioning the base cushioned member 25 on the seat

framework 1 may be omitted, or alternative arrangements provided.

Variations of the form of the seat will be readily apparent to persons skilled in the art of seat design. For example, the handles 16,17 provided on the right hand side of the framework 1 may readily be provided elsewhere on the framework 1, for example on the left hand side of the framework 1. Likewise, the series of struts 11 which support the base cushioned member 25 may be formed as a solid metal piece.

CLAIMS

1. A seat including a support member defining the base and back of the seat, and a removable seat insert designed to fit into a recess in the support member.
2. A seat according to claim 1 in which the support member includes at least one generally U-shaped, portion defining at least part of the recess.
3. A seat according to claim 2 in which there are two of the generally U-shaped portions, the portions being oppositely directed so as to define the recess between the two portions, each portion being carried on the base or back of the seat.
4. A seat according to any one of the preceding claims in which the support member defining at least part of the recess is at least partially upholstered.
5. A seat according to any one of the preceding claims in which the removable seat insert comprises a base portion and a back portion connected by a flexible portion so as to enable inclination of the back portion relative to the base portion.

6. A seat according to any one of the preceding claims in which the removable seat insert incorporates a heater arrangement for connection to an external power supply.

7. A seat according to any one of the preceding claims in which the removable seat insert incorporates a switch means operable by pressure on the seat insert, the switch means being connectable to an external power supply.

8. A seat according to any one of the preceding claims in which the seat is a vehicle seat.

9. A seat according to any one of the preceding claims including a hook member attached to one of the support member and the removable seat insert, the hook member being effective to engage the other of the removable seat insert and the support member.

10. A seat according to any one of the preceding claims including an aperture and peg arrangement arranged to enable the location of the removable seat insert in the recess in the support member.

11. A removable seat insert adapted to fit in a

recess in a support member for a seat.

12. A removable seat insert according to claim 11 comprising a base portion and a back portion connected by a flexible portion so as to enable inclination of the back portion relative to the base portion.

13. A removable seat insert according to claim 11 or claim 12 incorporating a heater arrangement for connection to an external power supply.

14. A removable seat insert according to any one of claims 11 to 13 incorporating a switch means operable by pressure on the seat insert, the switch means being connectable to an external power supply.

15. A removable seat insert according to any one of claims 11 to 14 adapted to fit in a recess in a support member for a vehicle seat.

16. A support member defining the base and back of, a seat, the support member including a recess adapted to receive a removable seat insert.

17. A seat substantially as hereinbefore described with reference to the accompanying figures.

18. A removable seat insert substantially as hereinbefore described with reference to the accompanying figures.

19. A support member for a seat substantially as hereinbefore described with reference to the accompanying figures.

Examiner's report to the Comptroller under  
Section 17 (The Search Report)

Application number

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## Relevant Technical fields

- (i) UK CI (Edition L ) A4L (LATC, LBBA, LBLA, LBLE,  
LCR)
- (ii) Int CI (Edition 5 ) B60N 2/38

Search Examiner

M J PENNELL

## Databases (see over)

- (i) UK Patent Office

- (ii)

Date of Search

25 MARCH 1993

Documents considered relevant following a search in respect of claims 1-19

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	EP 0331241 A2 - (SAME) see eg. figures 3,5	1, 11, 16



Category	Identity of document and relevant passages	Relevant to claim(s)

### Categories of documents

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